

MATH FOR EXCELLENCE CURRICULUM

Calculus

Prerequisites for Calculus

1. Functions and graphs
2. Transformation of functions
3. Exponential functions
4. Logarithm functions
5. Trigonometric functions

Functions, graphs, and limits

1. Rate of change and Limits
2. Limits involving infinity
3. Continuity
4. Rate of change and tangent lines
5. Limits of Functions (incl. one-sided limits)
6. Asymptotic and Unbounded Behavior
7. Continuity as a Property of Functions

Derivatives

1. Concept of the Derivative
2. Derivative at a Point
3. Derivative as a Function
4. Differentiability
5. Rules of Differentiation
6. Velocity and other rates of change
7. Derivatives of Trigonometric functions



8. Derivatives of Exponential and Logarithm functions
9. Chain Rule
10. Implicit Differentiation
11. Second Derivatives
12. Applications of Derivatives
13. Computation of Derivatives

Integrals

1. Estimating with Finite Sums
2. Definite Integrals
3. Interpretations and Properties of Definite Integrals
4. Applications of Integrals
5. Fundamental Theorem of Calculus
6. Definite Integrals and Antiderivatives
7. Techniques of Antidifferentiation
8. Applications of Antidifferentiation
9. Numerical Approximations to Definite Integrals

